U.S. Department
of Transportation

**Federal Aviation
Administration**

Zero
Accidents...

A

Shared
Responsibility

19960430 029

February 9, 1995

Industry

Labor
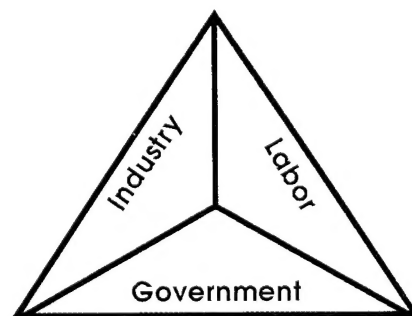
Government

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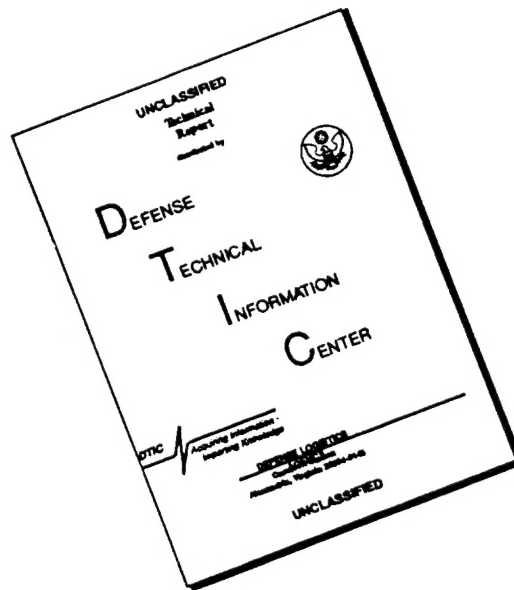
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Executive Summary

On January 9 and 10, 1995, more than 1,000 industry, Government, and union aviation officials met in Washington, D.C. in an unprecedented working session to address aviation safety. A wide range of safety improvements were recommended. Secretary Peña committed to develop an action plan within 30 days that would detail DOT and FAA's response to these issues.

This plan clearly reflects the underlying theme of the conference: Aviation safety is a shared responsibility. In a renewed commitment to this shared responsibility:

- Airlines are taking immediate, voluntary action to establish a safety office reporting to the CEO of every airline;

- In 1996, FAA will publish new regulations that require an independent flight safety department at every airline operating aircraft with more than nine passenger seats; and

- In March 1995, FAA will publish new regulations that require one level of safety for all air carriers operating aircraft with more than nine passenger seats.

The plan identifies a number of new initiatives to increase sharing of safety data including:

- A new DOT policy to be announced in February 1995 that will protect data collected by airlines as part of their Flight Operations Quality Assurance (FOQA) programs from use in FAA enforcement actions;

- A demonstration project will be initiated in April 1995 to begin a FOQA program at several airlines; and

- FAA will make its National Aviation Safety Data Analysis Center (NASDAC) available to all users.

Key initiatives in flight crew training include accelerating implementation of the Advanced Qualification Program (AQP) to provide greater use of simulation and better training for flight crews. Specific AQP initiatives include:

- Broadening the understanding of AQP through industry seminars beginning in May 1995;

- Streamlining the administrative aspects of AQP by October 1995; and

- Immediately adding additional FAA staff to facilitate processing industry's AQP applications.

FAA will increase its focus on maintenance factors that contribute to safety just as we have with pilot training including:

- Propose expanding the 1995 FAA strategic plan to provide for development of Maintenance Resource Management (MRM) program based on successful CRM models; and

- Developing new, regulatory qualification standards for airline maintenance technicians during FY 1995..

Many initiatives in the area of emerging technology will be completed between 1995 and 1998. These initiatives include:

- Improving approach and navigation capabilities through the expanded use and rapid implementation of satellite navigation systems;

- Achieving an agreement with the user community on implementation of two way datalink to reduce communication errors and improve distribution of weather information

By September 1995, FAA will provide products that include:

- A definition of human factors requirements in advanced maintenance concepts;

- A national database for aviation human factors research;

- A human factors design standard;

- An updated human factors guide for industry and government that includes information on human factors environmental aspects related to maintenance;

These initiatives and the many others outlined in this Aviation Safety Action Plan represent the shared commitment of government, industry, and unions to meet the zero accident challenge.

Acknowledgments

The Secretary of Transportation and Administrator of the FAA gratefully acknowledge the hard work done by the conference chairs and co-chairs. These individuals were:

CREW TRAINING:
Chair:	Ted Mallory, ATA	
Co-chairs:	T. Shanahan, RAA	Tom Toula, FAA
	Bill Edmonds, ALPA	Tom Longridge, FAA

AIR TRAFFIC CONTROL AND WEATHER:
Chair:	Jack Ryan, ATA
Co-chairs:	Craig Tompkins, RAA
	Bob Massey, ALPA
	Lane Speck, FAA

SAFETY DATA COLLECTION AND USE:
Chair:	John O'Brien, ALPA	
Co-chairs:	David Harrington, FAA	Charles Huettner, FAA
	Ed Soliday, ATA	Ken Marshall, RAA

APPLICATIONS OF NEW TECHNOLOGY
Chair:	Bill Cotton, ATA
Co-chairs:	Walt Coleman, RAA
	Ted Demosthenes, ALPA
	Tom Imrich, FAA

AIRCRAFT MAINTENANCE PROCEDURES AND INSPECTION:
Chair:	Larry Brett, ATA	
Co-chairs:	Ken Hobby, RAA	Dave Smith, ALPA
	John Goglia, IAM	Fred Leonelli, FAA

DEVELOPMENT OF FLIGHT OPERATING PROCEDURES:
Chair:	Jeff Ariens, ATA
Co-chairs:	Tim Keuscher, RAA
	Greg Cardis, ALPA
	Jack Howell, FAA

We would like to thank the approximately 1,000 conference attendees who answered our call and devoted themselves to discussing aviation safety issues.

Finally, we would like to express our appreciation to Messrs. Tom Accardi and Dick Birnbach and the many other DOT and FAA employees who worked behind the scenes to make this entire effort a success.

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Safety Conference Overview

On December 14, 1994, Federico Peña, Secretary of Transportation, invited senior U.S. aviation officials to meet with him and FAA Administrator David Hinson in a safety conference in Washington D.C. Invitations were sent to the chief executive officers and senior officials of all airlines operating with 10 or more passenger seats which included commuter and regional airlines, major air carriers, and air transport companies. FAA field office personnel, aviation unions, manufacturers, trade associations, and academic institutions were also asked to participate. In all, over 170 organizations were invited to the conference.

On January 9 and 10, 1995, more than 1,000 industry, Government, and union aviation officials met in Washington, D.C. in an unprecedented working session to address safety in the aviation industry. The conference opened with remarks by Secretary Peña which set the tone and the goal of the conference: meeting the challenge of zero accidents. The Secretary charged participants to conduct a "ruthlessly honest self-evaluation" of the state of airline safety.

In addition to the Secretary, conference participants were addressed during the general session by: Administrator Hinson; Deputy Administrator Linda Hall Daschle; FAA Associate Administrator for Regulation and Certification Anthony Broderick; National Transportation Safety Board Chairman James Hall; and Representative James L. Oberstar.

The focus of the conference, however, was the work conducted by 950 participants in 6 workshops on aviation safety. The workshop subjects, goals, and discussion items had been developed by a steering group composed of representatives from airline management, trade associations, unions, and the FAA. The six workshops covered Crew Training; Air Traffic Control and Weather Issues; Safety Data Collection and Use; Applications of Emerging Technologies; Aircraft Maintenance Procedures and Inspections; and Development of Flight Operating Procedures

Workshops

Crew Training

ATC and Weather Issues

Safety Data Collection and Use

Applications of Emerging Technologies

Aircraft Maintenance Procedures and Inspections

Development of Flight Operating Procedures

The workshops, which were chaired or co-chaired by representatives of the Air Transport Association (ATA), the Regional Airline Association (RAA), the Airline Pilots Association (ALPA), the FAA, and the International Association of Machinists (IAM), ranged in size from 50 to 220 individuals. Within each workshop, participants worked in small groups that also included balanced representation from Government, airline management, and unions. The Secretary and FAA Administrator rolled up their sleeves and joined in discussions held by participants in several of the workshops.

Over a period of several hours, the small groups in each workshop identified issues that they believed could contribute to greater aviation safety and proposed approaches to resolving

those issues. In all, 540 issues were identified in the 6 work-shops, and a wide variety of Government and company initiatives were identified to address them.

Following the intensive working sessions, workshop group chairs and co-chairs worked late into the evening to consolidate issues and identify high priority initiatives. High priority items were selected for discussion during the second day of the conference.

> *... the responsibility to improve safety is a shared one.*
>
> Federico Peña

After receiving presentations from the workshop leaders and co-chairs, Secretary Peña committed to development of an action plan and time tables detailing the DOT/FAA responses to the issues identified in the workshop. The Secretary also challenged the airlines to hire a safety officer reporting directly to upper management and to complete an internal safety audit of their carriers' operations.

Within a few days of the adjournment of the conference, the Government and industry workshop chairs and co-chairs agreed to continue working cooperatively to develop a joint action plan that reflected the safety priorities and commitment of the entire aviation community. In the ensuing four weeks, the workshop chairmen and FAA staff met in followup sessions to identify programs and time tables to address the high priority issues raised in the conference.

This report presents the work completed during the initial 30-day period and discusses the basic principles identified as essential to the achieve the goal of zero accidents. The report represents the first step in the aviation community's response to addressing the safety issues identified in the conference. The evaluation and analysis of the remainder of the 540 issues identified during the

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conference are underway. Establishment of a tracking system and network to assist industry, labor, and Government officials in working together and tracking progress on key initiatives is in the making. Most importantly, each of the major segments of the aviation community (i.e., DOT, FAA, airlines, and unions) are reprioritizing programs, shifting resources, and focusing management attention on actions required to meet the zero accident challenge.

We can achieve zero accidents. We must achieve zero accidents
David Hinson

Guiding Principles

There are four basic principles essential to meeting the challenge of zero accidents that emerged from the Safety Conference held on January 9 and 10, 1995. These principles will guide development and implementation of all safety initiatives.

- ■ Pursuit of the goal of zero accidents is a shared responsibility of all Government, industry, and labor organizations and of each individual member of the aviation community.

- ■ The aviation community must change from a mind set that minimizes accidents to one that demands zero accidents.

- ■ FAA and industry approaches to safety must be proactive and focus on anticipating safety threats and preventing mishaps.

- ■ Safety data and information must be shared freely among members of the aviation community to ensure the greatest safety benefits to the flying public.

"... the future of the American aviation industry is uniquely dependent on the Public's continued faith in its commitment to safety."

Linda Hall Daschle

AVIATION
SAFETY CONFERENCE
WASHINGTON, D.C.
January 9-10 · 1995

Workshops

The FAA and industry developed or identified 173 initiatives which were responsive to the issues and approaches generated at the conference workshops. Of these, 91 were initiatives to be published either in the FAA 1995 Strategic Plan or the FAA 1995 Research Engineering and Development (RE&D) Plan. In response to the issues identified in the conference, 15 of the Strategic Plan initiatives were modified and/or accelerated (i.e., 9 modified, 4 accelerated, 2 modified and accelerated). The remaining 82 initiatives were either new programs, ongoing efforts, or modifications of existing programs that were not in the Strategic Plan or the RE&D Plan (i.e., 38 new initiatives, 39 ongoing, 5 modified).

The remainder of this report is organized by workshop. For each workshop, the original workshop goal is restated and major themes are presented. The initiatives are presented in response to each issue and approach briefed in the report-out session of the conference. Many of the issues and approaches that were generated in the different workshops were similar or overlapped in their content. For presentation purposes, initiatives are listed for each issue or approach to which they apply.
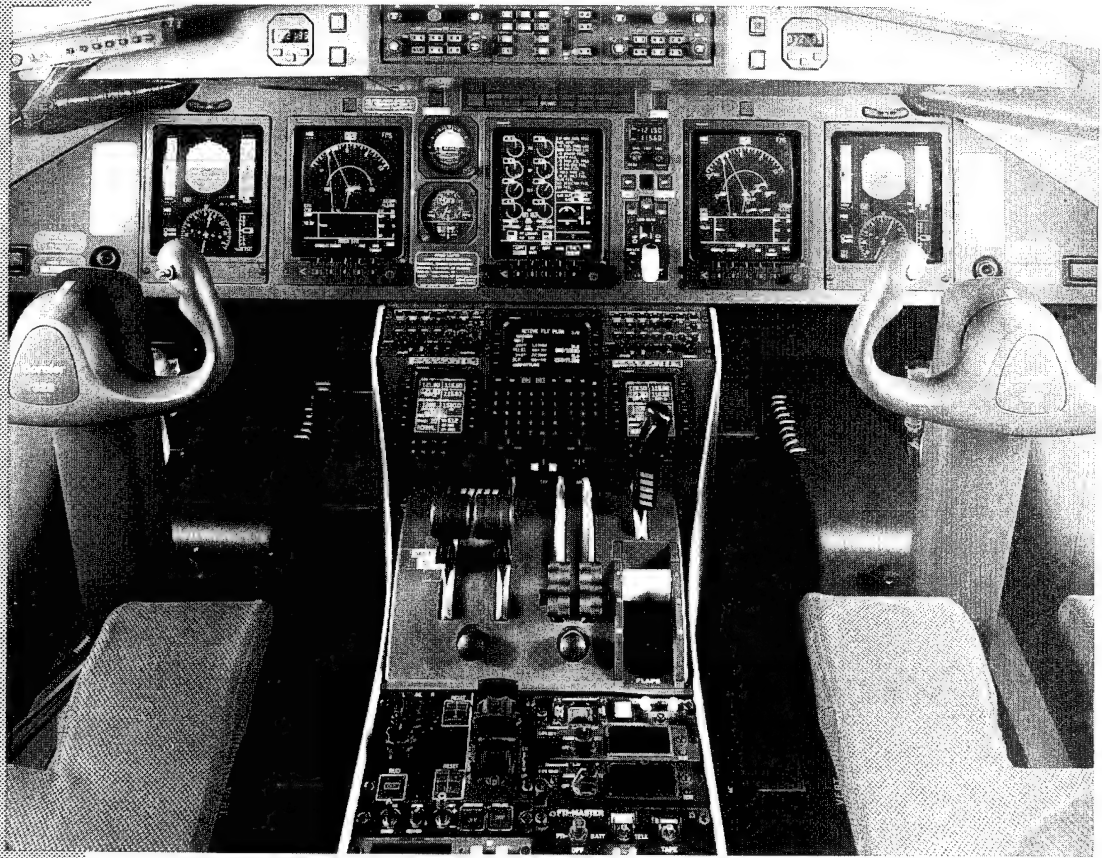
Crew Training

GOAL

Enable rapid adoption of modern training methods and technologies.

MAJOR THEMES

- FAA and industry should accelerate the implementation of the Advanced Qualification Program and make it more readily accessible to regional airlines.

- Better criteria are needed for the use of simulation in aviation training programs at all air carriers.

- There is a pressing need for research and training programs related to human factors (crew resource management, stress, fatigue, etc.).

- More data and trend information are needed to help identify and validate crew training requirements

WORKSHOP #1: CREW TRAINING		
Safety Conference Issue	*FAA/Industry Initiative*	*Initiative Completion*
Issue - Need to Accelerate Advanced Qualification Program (AQP) Implementation	Develop the capacity to support the initial implementation of the AQP in seven major air carriers and three commuter air carriers with periodic status reports (i.e., at least one AQP program in each such airline).	FY 1995
	Continue implementation of AQP in seven major air carriers and three commuter air carriers with periodic status reports (i.e. transitioning multiple aircraft fleets to AQP in each such company).	FY 1996
	Support the implementation of AQP in 50% of all major air carriers and 20 commuter air carriers with periodic status reports.	FY 1998
Approach - Reduce Administrative Complexity of AQP	Form an FAA/industry Task Force to consider development steps/streamlining administrative aspects.	FY 1995
	Develop draft Advisory Circular (AC) 120-54 revision on AQP for approval process.	FY 1997
- Expand the Existing FAA Initiative to Develop and Distribute a "Model AQP"	Develop model AQP for Federal Acquisition Regulation (FAR) Part 135 operators.	May 1996
	Develop refined model AQP for Part 121 and 135 operators.	FY 1997
Issue - Lack of Regional Airline Familiarity With AQP	Develop the capacity to support the initial implementation of the AQP in seven major air carriers and three commuter air carriers with periodic status reports (i.e., at least one AQP program in each such airline).	FY 1995

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WORKSHOP #1: CREW TRAINING		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Approach - Conduct AQP Training Seminars at Appropriate Industry Conferences	A joint government/industry AQP working group has developed and will conduct AQP seminars. - Initial presentation to Regional Airline Association (RAA) members will take place at 1995 RAA Crew Resource Management (CRM) Conference. - The first AQP workshop for regionals and other interested parties will be held at the AQP Working Group meeting. RAA participation on FAA/Industry Task Force on AQP streamlining.	March 1995 May 1995
Issue - Timely Processing and Approval of Air Carrier AQP Documents **Approach** - Explore Possibilities for Augmenting FAA AQP Staff	Develop the capacity to support the initial implementation of the AQP in seven major air carriers and three commuter air carriers with periodic status reports (i.e., at least one AQP program in each such airline). FAA will provide additional staff to improve AQP processing.	FY 1995 April 1995
Issue - Emphasize FAR 142 Approval **Approach** - Accelerate the Approval Process	Final Rule completion	March 25, 1995
Issue - Allow Second in Command to Proceed From Level C Training to Initial Operating Experience Without Additional Aircraft Training		

Safety Conference Issue	FAA/Industry Initiative	Initiative Completion
Approach - Loft Training Is a Proven Asset, Amend the Regulation to Eliminate the Aircraft Requirement	Develop simulator training criteria and incorporate them in FAR Part 121 (Appendix H).	FY 1995
Issue - Allow the FAR 121.434 Required FAA Observation to Be Accomplished by a Check Airman or Airline Program Designees **Approach** - Allow Carriers to Use the Aircrew Program Manager (APM) Program to Perform This Function	Requires regulatory change. FAA will work with Air Transport Association (ATA) training committee to validate a need for a universal change.	FY 1995
Issue - Aviation Problem and Adverse Trend Information Is Not Available From the FAA **Approach** - Offer Easily Accessible Safety Information System Similar to Commercially Available on-line Information Systems	Develop a plan to make National Aviation Safety Data Analysis Center (NASDAC) data available.	FY 1995
	Develop a plan for the use of de-identified digital in-flight operational information to monitor aircraft status and operational events.	FY 1995
	Initiate cooperative digital data acquisition with industry for research to develop analysis strategies.	FY 1996
	Implement the use of de-identified digital in-flight operational information to monitor aircraft status and operational events.	FY 1997
	Initiate a process to use industry-collected data to identify systemic problems related to aircraft design and manufacture.	FY 1997
	Determine applicability of digital in-flight operational information and simulator training information to pilot training and qualification.	FY 1997

| WORKSHOP #1: CREW TRAINING		
Safety Conference Issue	*FAA/Industry Initiative*	*Initiative Completion*
Issue - Strengthen CRM to include Flight Attendants and Dispatchers **Approach** - Include this Element in the Rulemaking	Air carrier training Notice of Proposed Rulemaking (NPRM) addresses this issue. Revise AC 120-51A to address CRM. Develop an NPRM requiring scheduled commuter air carriers operating aircraft with more than nine seats to conform to the same level of safety required of major air carriers. Develop an AC for dispatcher resource management	December 1994 February 1995 March 1995 FY 1995

Issue
- Amend FAR Part 135 to Require Operators Carrying 10 or More Passengers in Scheduled Service to Comply With FAR Part 121 Training Requirements
 	
Approach
- In addition to the Forthcoming NPRM:
  - Add the Reservation That Equipment Limitations Such As Lack of Cockpit Jumpseats Be Recognized
  - Phase Compliance If the Compliance Plan Is Submitted by a Predetermined Date
	Develop an NPRM requiring scheduled commuter air carriers operating aircraft with more than nine seats to conform to the same level of safety required of major air carriers.	March 1995

WORKSHOP #1: CREW TRAINING		
Safety Conference Issue	*FAA/Industry Initiative*	*Initiative Completion*
Approach (Cont'd) - Include Incentives in the Form of Tax Credits for compliance and for the Development of Simulators and Advanced Training Devices for Smaller Carriers	Administration policy determination necessary.	
Issue - Research on New Technologies Is Necessary **Approach** - Emphasize the Following Areas: -- Human Factors -- Fatigue - Stress, complacency --- Crew Duty and Rest --- Scheduling --- Crew Resource Management	FAA will publish a revised National Plan for Aviation Human Factors. Establish the national database for aviation human factors research as a national resource and coordination mechanism. Develop a process to access, integrate, and analyze flight crew human factors data relevant to aviation safety. Revise AC 120-51A to address crew resource management Validate a process to access, integrate, and analyze flight crew human factors data relevant to aviation safety.	April 1995 FY 1995 FY 1995 February 1995 FY 1996
Issue - Simulation Should Be Used More Widely **Approach** - Require Aircraft Manufactures to Provide Accessible Data Packages	Some manufacturers are voluntarily doing this now. NPRM to amend FAR 121 to require simulator training.	Ongoing October 1995

WORKSHOP #1: CREW TRAINING		
Safety Conference Issue	*FAA/Industry Initiative*	*Initiative Completion*
Approach (Cont'd) - Use Flight Training Simulation As Primary - Expand the Use of Level C Simulators - Require Simulator Wind Shear Training Both 121 and 135 - Allow More Flight Training Credit in Simulators and Training Devices	Develop simulator training criteria and incorporate them in FAR Part 121 (Appendix H).	FY 1995
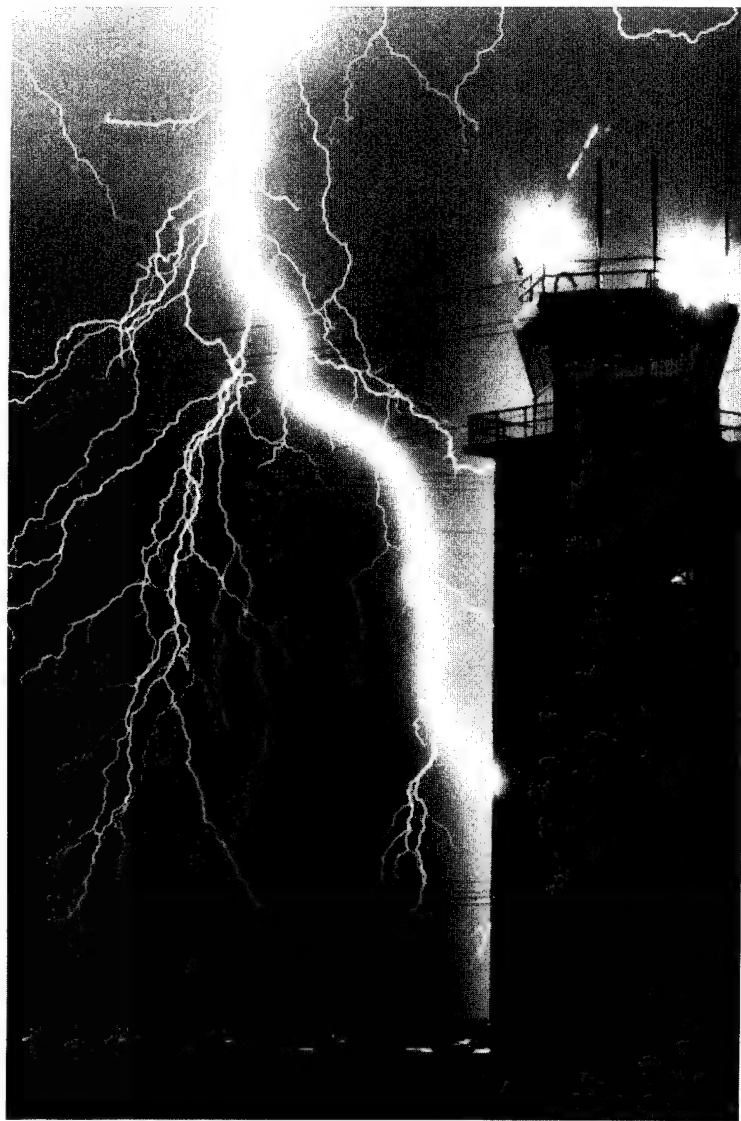
ATC and Weather Issues

GOAL

Identify goals and strategies to ensure that air traffic control and weather information systems and procedures are coherently aligned to ensure increased safety as well as increased efficiencies and effectiveness in flight operations.

MAJOR THEMES FROM WORKSHOP

- The FAA and industry need to upgrade the focus on safety for surface operations to the same level as that for flight operations (e.g., runway incursion technology, training on surface operation procedures, airport surface technology).

- There is a need for more rapid deployment of the technologies required to upgrade safety of surface operations.

- Pilot/controller communications must be enhanced.

- There is a requirement for more accurate and timely weather data for flightcrews, dispatchers, and controllers, as well as the need for better training of airmen in the practical knowledge needed to use this data to increase safety in flight operations.

- There are a number of opportunities to collect and automatically disseminate significant amounts of environmental data via onboard sensors and datalink technology.

WORKSHOP #2: ATC & WEATHER ISSUES

Safety Conference Issue	FAA/Industry Initiative	Initiative Completion
Issue - Runway Incursion Technology Improvements **Approach** - Accelerate Implementation of Technology Designed to Prevent Runway Incursions for example:		
	FAA will issue Revised Runway Incursion Plan	March 1995
	40 airports were in apparent non-compliance regarding signage on 1/1/95. Airports have been notified; FAA is aggressively enforcing standards.	May 1995
	A simple, low-tech and low-cost solution, such as paint marking, can be deployed. A new specification to improve pavement markings by using beads in paint will be issued by FAA.	May 1995
	Establish standards for cockpit moving map displays to enhance situational awareness on the airport surface.	FY 1996
-- ADS-B, ASDE-3, AMASS.	Issue Request For Proposals (RFP) for Airport Surface Detection Equipment (ASDE-X) radars.	FY 1997
	33 ASDEs will be implemented by 1997, and the next 7 by 1999. Airport Movement Area Safety System (AMASS) schedule will follow ASDE.	FY 1997
	Commence installation of AMASS at ASDE-3 sites.	FY 1997
	Complete installation and commissioning of AMASS at ASDE-3 sites.	FY 1999
	Complete definition of Airport Surface Automation functional requirements considering human factors data, in cooperation with airport operators and other air traffic control (ATC) system users.	June 1995
	Implement data link for Global Positioning System (GPS)-based Automated Dependent Surveillance (ADS) capability on the airport surface.	FY 1998

Safety Conference Issue	FAA/Industry Initiative	Initiative Completion
Approach (Cont'd) -- FAA Should Study the Use of Synthetic and/or Enhanced Vision Technology to Prevent Runway Incursions	Develop operational concept and requirements for the 21st century airport. Joint research initiatives underway between Advanced Research Projects Agency (ARPA), National Aeronautics and Space Administration (NASA), Department of Defense (DOD), FAA and Industry.	FY 1995 FY 1995
Issue - Training on Procedures for Surface Operations Are Generally Not As Detailed and Formalized As Those for Flight Operations **Approach** - FAA/Users Should Develop Standard Procedures and Verbal Coordination for Surface Operations, and Then Ensure That Training Reflects These Upgrades. General Aviation Interests Should Also Upgrade Pilot Procedures for Single-Pilot Operations.	FAA will issue Revised Runway Incursion Plan FAA will develop and refine standard taxi procedures and routes in coordination with Air Traffic Procedures Advisory Committee (ATPAC). Approve surface movement guidance and control plans at all airports operating below 1,200-foot Runway Visual Range (RVR). The Practical Test Standards (PTS) for pilots will be upgraded so that all pilots can demonstrate practical knowledge. FAA will form a government/industry working group to develop controller and pilot standards for surface and low visibility operations.	March 1995 July 1995 FY 1996 FY 1996 FY 1995
Issue - Cockpit Automation Devices for Displaying the Aircraft's Position on the Airport		

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WORKSHOP #2: ATC & WEATHER ISSUES		
Safety Conference Issue	*FAA/Industry Initiative*	*Initiative Completion*
Approach - Agency Should Further Encourage and Conduct Research and Development of Moving Map Technology for Complex Airport Environments	Establish standards for cockpit moving map displays to enhance situational awareness on the airport surface. [Note: Manufacturers are tying moving map capabilities to their on-board library systems for advanced cockpit aircraft.]	FY 1996 Ongoing
Issue - Use of Non-Standard Phraseology by Pilots and Controllers **Approach** - Develop a Publication of Standard ATC Communication Phraseology for Pilots and Controllers - Publication Must Provide Definitions of ATC communications Words/Phraseology to Facilitate and Ensure Common Understanding and/or Basis to Know Other Party's Intentions/ Expectations	FAA will lead a project to develop a "user friendly" pamphlet to explain commonly used phrases and clearances. It will explain what actions are expected on part of pilots and controllers and consider issues associated with foreign flag carrier pilots. Provide recommendations on pilot/controller communication procedures.	April 1995 FY 1995
Issue - Blockage of ATC Communications Due to Stuck Microphones and Simultaneous Communication		

| WORKSHOP #2: ATC & WEATHER ISSUES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Approach - Research and Review Available Technology to Eliminate Blockage - Mandate Implementation of Successful Technology	Minimal Operational Performance Specifications (MOPS) have been developed. New products are being tested by FAA. FAA will develop appropriate ground/air implementation plan.	July 1995 FY 1996

Issue
- Use and Proficiency in Spoken English - Foreign Flag Carrier Pilots and Foreign Controllers
 	
Approach
- FAA Should Propose to ICAO:
  - A Spoken English Test for All Commerical Pilots
  - Controllers Be Required to Pass Spoken English Test and Use Only English on ATC Radios to All Aircraft
  - Standardized ICAO Phrase-ology by Pilots and Controllers
 	
- Pilots Must Be Made Aware of Any Country Differences from ICAO Standardized Phraseology
	FAA will develop standards for proposal to International Civil Aviation Organization (ICAO). (No ICAO standard currently exists which identifies English as the official international language to be used in ATC.)
	
	Identify differences between ICAO phraseology and US phraseology.
		April 1995
		
		April 1995

Issue - Respond to recommendations on weather		

Safety Conference Issue	FAA/Industry Initiative	Initiative Completion

Issue (Cont'd)
- National Aviation Weather Users' Forum Recommendations - 1994
- National Research Council Report - March 1994
  -- Published As "Weather for Those Who Fly"
  -- Previous Reports - 1991, 1992, 1993
 	
Approach
- FAA, National Weather Service (NWS), Industry Should Commit to Implementation and Completion of Action Plans Based on Above
	FAA Action Plan has been completed. Coordination of action plan with industry will be initiated.	March 1995

Issue - Collection and Dissemination of Real-Time Weather Information	Complete integration of Terminal Doppler Weather Radar and Low Level Wind Shear Alert Systems (LLWAS enhanced) at airports with both systems installed.	FY 1995
	Conduct flight trials of data-link-based traffic and weather information services for general aviation	FY 1995
	Deploy Data Link Processor, Phase 2 (DLP-2), which will disseminate alphanumeric weather products and en route ATC clearances including warnings, directly to the cockpit through high resolution Doppler radar.	FY 1998
	Provide high resolution Doppler radar products directly to the controllers' displays.	FY 1998

| WORKSHOP #2: ATC & WEATHER ISSUES		
Safety Conference Issue	*FAA/Industry Initiative*	*Initiative Completion*
Approach - FAA Should Appoint a Single Senior Level Manager/Office to Expedite Implementation and Coordination of Weather Systems and Services	FAA will investigate feasibility of this recommendation. [Note: Industry also recommends that in the long run, NWS aviation functions be transferred to FAA.]	FY 1995
Issue - Need Additional Airmen Education in Weather (ATC/Dispatch/ Pilot)		
Approach - FAA Should Establish an Elevated Standard for Airman Knowledge of Weather/ Atmosphere	FAA will review written testing on weather, focusing on practical rather than theoretical weather knowledge.	May 1995
- Train Airmen on the Uses of New Weather Technologies	Upgrade PTS for pilots to encourage new training.	FY 1996
- Train Airmen on New Report Format(s)	FAA will coordinate with NWS to establish new Meteorological Terminal Aviation Routine Weather Report (METAR)/ Meteorological Terminal Aviation Weather Forecast (METAF) codes.	February 1995
- Implement ATC-Pilot Interface As a "Team Concept" for Weather Dissemination	Conduct flight trials of data-link-based traffic and weather information services for general aviation Deploy DLP-2, which will disseminate alphanumeric weather products and en route ATC clearances including warnings, directly to the cockpit through high resolution Doppler radar.	FY 1995 FY 1998

U.S. Commuter Accidents
1985 - 1994
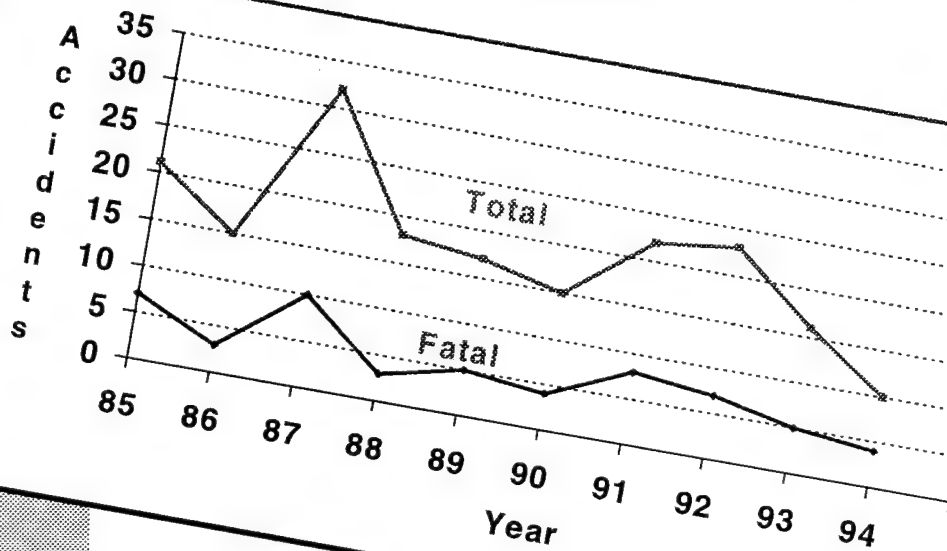
Commuter Accident Rates
Accidents per 100,000 Flight Hours
1975 - 1994
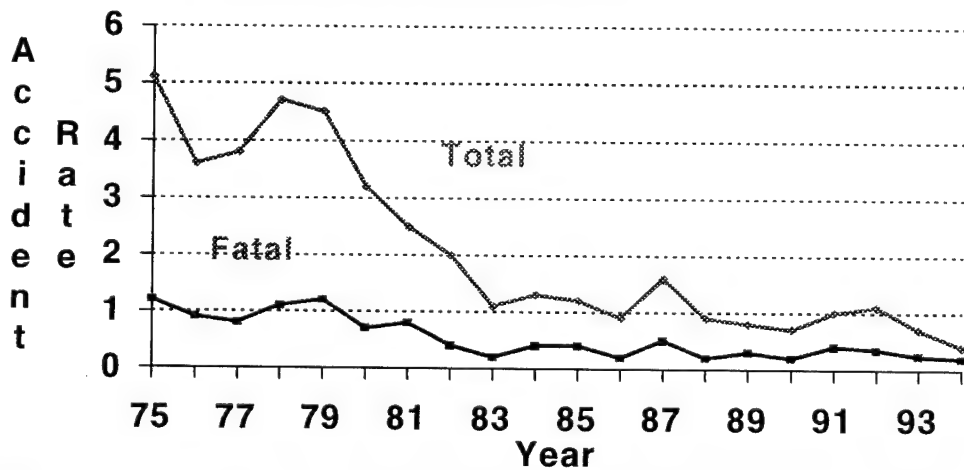
Safety Data Collection & Use

GOAL

Identify needed changes which will ensure all aviation safety data are available for immediate use in accident prevention.

MAJOR THEMES FROM WORKSHOP

> *"...with proper implementation of some innovative safety data collection and analysis techniques, we can improve our safety record."*
>
> **John O'Brien, ALPA**

■ Both the Government and industry need to improve their safety analysis capabilities.

■ The availability of safety-related data must be increased for both FAA and industry through:

⬚ Policy and legislation protecting use of data essential to safety analysis;

⬚ The Flight Operations Quality Assurance Program (a program for obtaining and analyzing data recorded in flight for the purposes of improving flightcrew performance; air traffic control procedures; airport maintenance and design; and aircraft operations, maintenance, and design); and

⬚ Enhancement of and improved access to existing safety data bases.

■ Actions should be taken to encourage development and use of airline partnership joint safety programs that include the sharing of information from airline crews and maintenance personnel. These programs foster cultural change that increases the sharing of information which can impact the safety of operations.

| WORKSHOP #3: SAFETY DATA COLLECTION AND USE		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Issue - Airline Safety Partnership Programs Would Encourage Airline Personnel to Provide Timely Safety Information **Approach** - Establish Working Relationships Between Airline Employees, Management, and the FAA - FAA Should Provide Standardized Policy and Procedures for the Use of Airline Safety Partnership Programs	Airline Safety Programs are underway at several major U.S. carriers. FAA will issue guidance for memorandum of understanding that will lead to additional partnerships. FAA will finalize Partnership for Safety Programs.	March 1995 July 1995
Issue - Facilitate Implementation of Flight Operations Quality Assurance (FOQA) Programs **Approach** - Best Method to Collect Recorded Flight Data Before an Accident Occurs	Air Transport Association (ATA)/Air Line Pilots Association (ALPA) letter sent to Administrator and a policy change is in development. A contract will be awarded to initiate a demonstration project with three industry participants. Develop a plan for the use of de-identified digital in-flight operational information to monitor aircraft status and operational events. Develop FOQA Advisory Circular (AC) guidance (ATA Task Force); will begin with initial products provided under Flight Safety Foundation contract for prototype FOQA program. Initiate cooperative digital data acquisition with industry for research to develop analysis strategies.	February 1995 April 1995 FY 1995 FY 1995 FY 1996

WORKSHOP #3: SAFETY DATA COLLECTION AND USE

Safety Conference Issue	FAA/Industry Initiative	Initiative Completion
Approach (Cont'd) - FAA/DOT Issue Immediate Policy Statement Followed by Rulemaking Exempting FOQA Program Data From Use in Enforcement Action	An FAA policy change is in development.	February 1995
- Encourage Carriers to Develop Test FOQA Program for Basis of AC	Develop FOQA AC guidance (ATA Task Force); will begin with initial products provided under Flight Safety Foundation contract for prototype FOQA program.	FY 1995
- Industry/Government/ Labor Task Force to Develop Means to Share Deidentified Data Within the Safety Community	A Task Force is in place to deal with use of FOQA data.	Ongoing
	Implement the use of de-identified digital in-flight operational information to monitor aircraft status and operational events.	FY 1997
	Initiate a process to use industry-collected data to identify systemic problems related to aircraft design and manufacture.	FY 1997
	Determine applicability of digital in-flight operational information and simulator training information to pilot training and qualification.	FY 1997
	Begin using industry-collected data to identify systemic problems in aircraft fleets, aviation personnel and maintenance.	FY 1997
Issue - Prevent Accidents Through Safety Data Analysis - Improve the Quality and Availability of Safety Data	Establish FAA/industry working group to prepare action plan for addressing quality and availability of safety data issues identified in the conference.	September 1995
Approach - Centralize and Publicize Availability of Safety Data	Open the National Aviation Safety Data Analysis Center (NASDAC) facility in the FAA Headquarters Building.	FY 1995

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WORKSHOP #3: SAFETY DATA COLLECTION AND USE		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Approach (Cont'd) - Improve Quality of FAA Databases	Initiate a process to use industry-collected data to identify systemic problems related to aircraft design and manufacture.	FY 1997
- Acquire Safety Critical Time Sensitive Information	Implement the use of de-identified digital in-flight operational information to monitor aircraft status and operational events.	FY 1997
- Trained Analysts to Utilize Data (Industry and FAA)	Initiate a process to use industry-collected data to identify systemic problems related to aircraft design and manufacture.	FY 1997
	Determine applicability of digital in-flight operational information and simulator training information to pilot training and qualification.	FY 1997
	Begin using industry-collected data to identify systemic problems in aircraft fleets, aviation personnel and maintenance.	FY 1997
- Disseminate Data Electronically	Develop a plan to make NASDAC data available.	FY 1995
Issue - Aviation Safety Reporting System (ASRS) Needs Updating and Expanding - Seen As an Immunity Tool - Data Not Used Fully **Approach** - Promote As an Accident Prevention Tool - Encourage Reporting - Expand to Include Maintenance Issues - Encourage Wider Analysis and Utilization	Begin implementing recommendations of 1994 National Association of Public Administration (NAPA) study on ASRS improvement.	FY 1995

WORKSHOP #3: SAFETY DATA COLLECTION AND USE		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Issue - Protections - Various concerns inhibit reporting of data - Punitive measures - Enforcement - Freedom of Information Act (FOIA) - Removal of concerns would facilitate retrieval of better data **Approach** - Introduce Regulation and/or Legislation to Protect Those Providing Safety Data	An FAA policy change is in development Administration policy determination necessary.	February 1995

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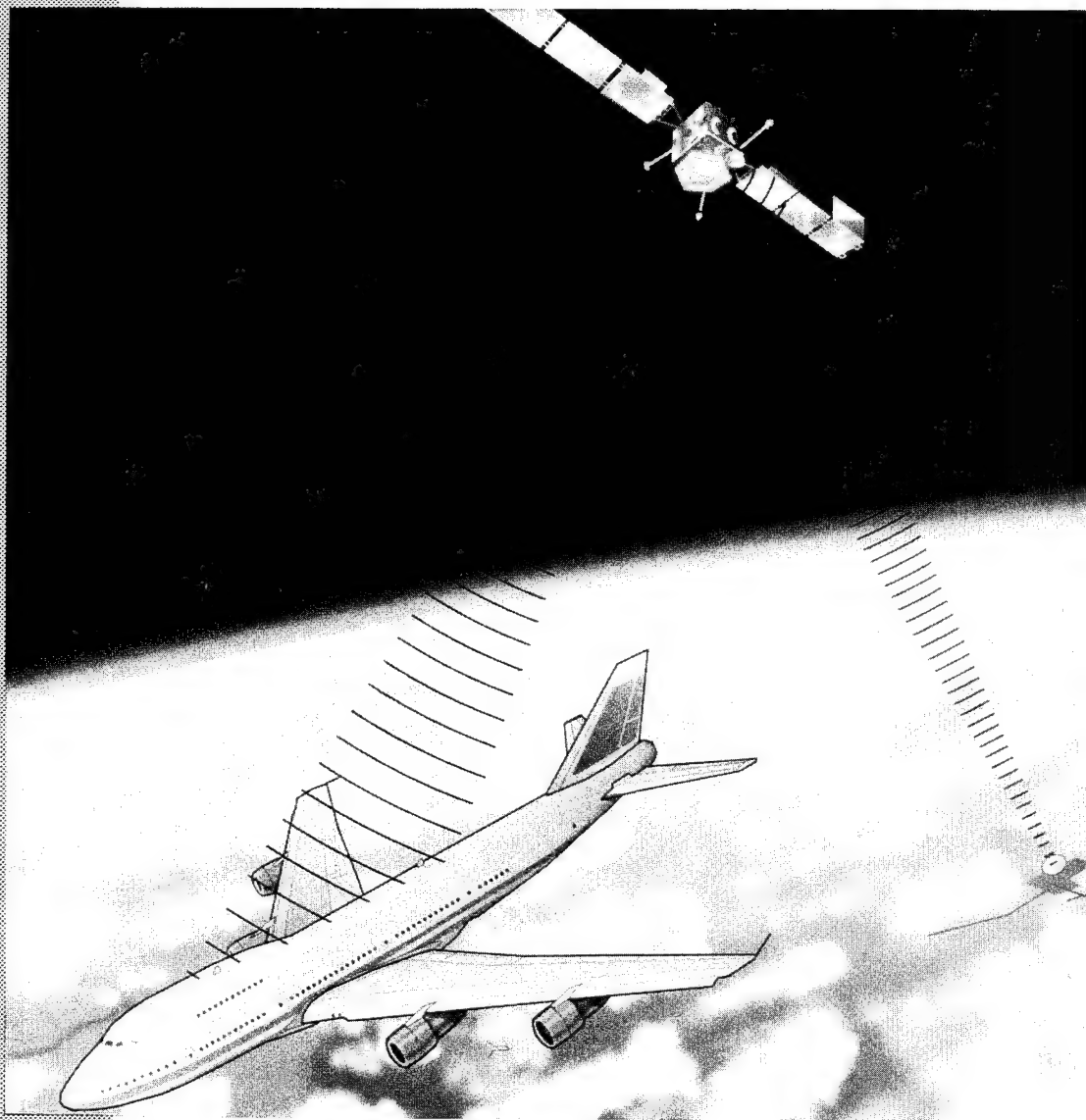
Applications of Emerging Technologies

GOAL

Identify applications and implementation strategies for these technologies.

MAJOR THEMES FROM WORKSHOP

> *"We need to develop an even greater sense of urgency in deploying new technologies that improve safety."*
>
> **Federico Peña**

■ FAA and industry should focus on the application of emerging technologies for:

- Improved safety of airport surface operations;

- Enhanced flight data recorder information for accident and incident investigation;

- More effective and environmentally friendly de-icing systems;

- Improved approach and navigation capabilities in all weather operations;

- Better incorporation of human factors considerations in all phases of the aviation industry from aircraft design and production through procedures development and training; and

- Obtaining more precise and timely maintenance data to improve inspection and facilitate early flaw detection/failure prediction.

■ The Government should establish financial incentives that encourage industry to develop and implement safety-related technologies.

WORKSHOP #4: APPLICATIONS OF NEW TECHNOLOGIES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Issue - Human Factors/Situational Awareness Systems	Update implementation strategies for the National Plan for Civil Aviation Human Factors.	FY 1995
	Define human factors requirements in advanced maintenance concepts.	FY 1995
	FAA will initiate an effort to develop a Maintenance Resource Management System for maintenance personnel, developed using the Crew Resource Management (CRM) model.	FY 1995
	Establish the national database for aviation human factors research as a national resource and coordination mechanism.	FY 1995
	Strengthen ties with DOD and DOT internal elements for increased leverage of human factors technology transfer and enhanced coordination.	FY 1995
Approach - Assure Human Centered Design	Publish human factors design standard.	FY 1995
	Complete full-scale prototypes of Center-TRACON Automation System (CTAS)/Traffic Management Advisory (TMA) and begin operational implementation, accounting for the human impact.	FY 1995
	Complete definition of Airport Surface Automation functional requirements considering human factors data, in cooperation with airport operators and other air traffic control (ATC) system users.	June 1995
	Conduct full-scale operational demonstration of Airport Surface Traffic Automation (ASTA) surveillance and automation functionality on airport surface operations at selected airports, analyzing human factor elements therein.	FY 1996
	Provide initial gate-to-gate ATC automation services based on Advanced Automation System (AAS), ASTA, and Differential Global Positioning System (DGPS), and human factors considerations fully integrated into Airspace Automation Operations.	FY 1998

WORKSHOP #4: APPLICATIONS OF NEW TECHNOLOGIES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Approach (Cont'd)	Commission non consolidated Terminal Radar Approach Control (TRACON) automation functions, fully considering human factor elements.	FY 1998
	Develop advanced Computer-Human Interface (CHI) prototypes for enroute radar-side (R-side) and data-side (D-side).	FY 1998
- Improve Takeoff & Landing Performance Monitoring	FAA monitoring NASA research and development program for possible operational impacts (Automatic Take-Off Performance System - ATOPS)	Ongoing
- Improve Airport Surface Operations	A simple, low-tech and low-cost solution, such as paint marking, can be deployed. A new specification to improve pavement markings by using beads in paint will be issued by FAA.	May 1995
	Define surface systems architecture.	FY 1995
	Develop operational concept and requirements for the 21st century airport.	FY 1995
	Issue design standards for automatic control of airfield lighting.	FY 1995
	Complete definition of Airport Surface Automation functional requirements considering human factors data, in cooperation with airport operators and other ATC system users.	June 1995
	Implement data link for Global Positioning System (GPS) -based Automated Dependent Surveillance (ADS) capability on the airport surface.	FY 1998
-Reduce Wake Vortex Vulnerability	Revise recommended standards for Wake Vortex separation.	July 1995
- Reduce Controlled Flight Into Terrain (CFIT) Exposure	Air Carriers install equipment in accordance with the FAA regulations for Ground Proximity Warning Systems (GPWS).	Ongoing
	Joint ATA/FAA task force and Boeing/Flight Safety Foundation initiatives are underway.	Ongoing

WORKSHOP #4: APPLICATIONS OF NEW TECHNOLOGIES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Issue - National Airspace System (NAS)/Air Traffic Systems/ Airports		
Approach - Enhance ATC	Clearly define role and direction of Air Traffic Control System Control Center (ATCSCC) in strategic and tactical management of operations in global air traffic management system.	FY 1995
	Expand the data link delivery of pre-departure clearances to 27 additional airports.	FY 1995
	Establish two-way satellite-based data link communications capability in oceanic airspace.	FY 1996
	Provide Automatic Terminal Information Service (ATIS) via data link at 60 airports.	FY 1996
	Begin operational use of Oceanic ATC procedures based upon GPS and two-way data link operations to achieve real benefits for equipped users in oceanic airspace.	FY 1996
-Prevent Runway Incursions	Define surface systems architecture.	FY 1995
	FAA will issue Revised Runway Incursion Plan	March 1995
	Complete definition of Airport Surface Automation functional requirements considering human factors data, in cooperation with airport operators and other ATC system users.	June 1995
	Implement data link for GPS-based ADS capability on the airport surface.	FY 1998
	Issue Request For Proposals (RFP) for Airport Surface Detection Equipment (ASDE-X) radars.	FY 1997
	Implement GPS-based ADS on the airport surface.	FY 1998

WORKSHOP #4: APPLICATIONS OF NEW TECHNOLOGIES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Approach (Cont'd) - Expand Traffic Alert and Collision Avoidance System (TCAS) Utilization	Initiate a demonstration of participatory separation utilizing TCAS/ Airborne Collision Avoidance System (ACAS) for in trail descent and wake vortex separation. [Participatory separation occurs when the pilots of two aircraft request the procedure to maintain separation of their aircraft using only their own onboard systems.]	FY 1996
-Implement Non-Verbal Communications	Achieve agreement with user community on implementation of two-way data link.	FY 1995
	Implement Oceanic Data Link (ODL) in Oakland and Anchorage (FY 1997) Air Route Traffic Control Centers (ARTCC).	FY 1996
	Complete definition of Data Link System to support DGPS and other Communication, Navigation, and Surveillance (CNS)/Air Traffic Management (ATM) operations. Achieve early approval of 1030 MHz for DGPS transmission (per draft Radio Technical Corporation of America (RTCA) report and industry endorsement).	FY 1996
	Deploy Data Link Processor, Phase 2 (DLP-2), which will disseminate alphanumeric weather products and enroute ATC clearances including warnings, directly to the cockpit.	FY 1998
	Establish two-way data link communications capability throughout domestic enroute and terminal airspace.	FY 1998
Issue - Navigation **Approach** - Improve Non-Precision Navigation Operations --Long Range Navigation (LORAN) - By Geographic/ Customer Need	130 LORAN-C approaches have been developed	

WORKSHOP #4: APPLICATIONS OF NEW TECHNOLOGIES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Approach (Cont'd) --Use Flight Management System (FMS) Longitudinal Navigation (LNAV)/ Vertical Navigation (VNAV)	FAA will issue enhanced guidance for field approvals. (Note: ATA Task Force is working on expansion of FMS arrival and departure procedures.)	FY 1995
- Implement GPS Capabilities ASAP	NOTE: 90 percent of existing instrument runways will have GPS approach capability using "overlay" program.	March 1995
	Initiate Minimum Operational Performance Standards (MOPS) for GPS as a sole means of navigation in domestic airspace and begin use of GPS in this role in both domestic and oceanic areas.	FY 1995
	Initiate contract for development of wide area differential GPS.	FY 1995
	Complete feasibility demonstration testing for Category (CAT) II/III precision approaches and landings.	FY 1995
	Approve GPS use as a primary means for oceanic navigation.	FY 1995
	Develop new GPS instrument approach procedures at a rate of 500 per year.	FY 1996
	Develop and implement terminal instrument procedures criteria, procedures development standards, and flight inspection policy and standards for DGPS CAT II/III.	FY 1996
	Complete definition of Data Link System to support DGPS and other CNS/ATM operations. Achieve early approval of 1030 MHz for DGPS transmission (per draft RTCA report and industry endorsement).	FY 1996
	Begin operational use of Oceanic ATC procedures based upon GPS and two-way link operations to achieve real benefits for equipped users in oceanic airspace.	FY 1996

WORKSHOP #4: APPLICATIONS OF NEW TECHNOLOGIES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Approach (Cont'd)	Implement Wide Area Augmentation System for GPS to publicize CAT I operations.	FY 1997
	Determine feasibility of GPS for CAT II and CAT III operations.	FY 1996
	FAA will formulate a policy on Instrument Landing System (ILS)/Microwave Landing System (MLS)/GPS in support of worldwide transition planning and will present to International Civil Aviation Organization (ICAO) for Communications and Operations meeting.	March 1995
	Develop and implement terminal instrument procedures criteria, procedures development standards, and flight inspection policy and standards for DGPS CAT II/III.	FY 1996
	Develop new GPS instrument approach procedures at a rate of 500 per year.	FY 1996
	Conduct demonstration/ validation risk reduction activities using industry provided subsystem for future terminal aircraft and weather surveillance system.	FY 1997
	Implement GPS-based ADS on the airport surface.	FY 1998
	Work in progress to approve CAT I.	FY 1997
- Support 'Autonomous Aircraft' Development	Complete definition of Data Link System to support DGPS and other CNS/ATM operations. Achieve early approval of 1030 MHz for DGPS transmission (per draft RTCA report and industry endorsement).	FY 1996
	Begin operational use of Oceanic ATC procedures based upon GPS and two-way link operations to achieve real benefits for equipped users in oceanic airspace.	FY 1996
	Develop and implement terminal instrument procedures criteria, procedures development standards, and flight inspection policy and standards for DGPS CAT II/III.	FY 1996
	Implement Wide Area Augmentation System for GPS to publicize CAT I operations.	FY 1997
	Establish reduced oceanic separation standards based on GPS and ADS.	FY 1997

WORKSHOP #4: APPLICATIONS OF NEW TECHNOLOGIES		
Safety Conference Issue	*FAA/Industry Initiative*	*Initiative Completion*
Approach (Cont'd)	Implement GPS-based ADS on the airport surface.	FY 1998
	Implement GPS-based ADS surveillance capabilities into en route and terminal automation systems.	FY 1998
	Approve GPS-based CAT I operations as a primary means in the United States.	FY 1998
Issue - Structural Icing	Complete east coast field testing for observation and forecasting of ice.	FY 1996
	Support airport technology research and development to develop environmentally acceptable alternatives for de-icing and anti-icing agents.	FY 1997
Approach - Build Central De-Icing Facilities - Multiple Aircraft, Runway End	FAA has enabled eligibility for funding under the Airport Improvement Program (AIP). Criteria are in existing Advisory Circular (AC) 150-5300-14.	
- Develop New De-Icing Fluids - Greater Holdover, Lower Cost, Earth Friendly	New de-icing fluid holdover table under development; runway de-icing fluids being tested.	FY 1996
	Testing of innovative ice prevention and removal for airport surfaces.	FY 1997
	Publish an AC for runway surface ice prevention based upon testing results.	FY 1998
- Install Ice Detection and Warning Systems	Evaluate an optical-based aircraft surface ice detection system.	FY 1995
	Evaluate infra-red aircraft surface ice detection system.	FY 1998
- Install Ice Rejection Coatings	Conduct research on ice shedding materials and coatings.	FY 1996
- Evaluate Anti-Ice/De-Icing Systems	Project under current development to evaluate certification rules for flight in icing conditions. FAA will publish project plan and milestones.	FY 1995

WORKSHOP #4: APPLICATIONS OF NEW TECHNOLOGIES		
Safety Conference Issue	*FAA/Industry Initiative*	*Initiative Completion*
Issue - Increase the Usefulness of Flight Data Recorders	Policy change in development in response to ATA request.	February 1995
	Develop a plan for the use of de-identified digital in-flight operational information to monitor aircraft status and operational events.	FY 1995
Approach - Add TCAS Advisories as Digital Flight Data Recorder (DFDR) Parameter, Possibly Others	Initiate cooperative digital data acquisition with industry for research to develop analysis strategies.	FY 1996
	Implement the use of de-identified digital in-flight operational information to monitor aircraft status and operational events.	FY 1997
- Develop Data Analysis Programs to Process DFDR Readout for Flight Operations Quality Assurance (FOQA)	Initiate a process to use industry-collected data to identify systemic problems related to aircraft design and manufacture.	FY 1997
	Determine applicability of digital in-flight operational information and simulator training information to pilot training and qualification.	FY 1997
- Data Link Aircraft Performance Parameters to Operator	Begin using industry-collected data to identify systemic problems in aircraft fleets, aviation personnel and maintenance.	FY 1997
- Create Systems to Ensure Protection of DFDR Data for FOQA	An FAA policy change is in development.	February 1995
	Administration policy determination necessary.	
	Develop FOQA AC guidance (ATA Task Force); will begin with initial products provided under Flight Safety Foundation contract for prototype FOQA program.	FY 1995
	A Task Force is in place to deal with use of FOQA data.	Ongoing

WORKSHOP #4: APPLICATIONS OF NEW TECHNOLOGIES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Approach (Cont'd)	Implement the use of de-identified digital in-flight operational information to monitor aircraft status and operational events.	FY 1997
	Initiate a process to use industry-collected data to identify systemic problems related to aircraft design and manufacture.	FY 1997
	Determine applicability of digital in-flight operational information and simulator training information to pilot training and qualification.	FY 1997
	Begin using industry-collected data to identify systemic problems in aircraft fleets, aviation personnel and maintenance.	FY 1997
Issue - Obtain More Precise and Timely Maintenance Data **Approach** - Strain Gauge Stress Points for Detection of Pending Failures	Demonstrate a prototype structural failure monitoring and advisory system.	FY 1999
- Data Link Certain Parameters for Failure Prediction		
- Expand Use of Ultra-Violet Techniques for Crack and Corrosion Detection	Corrosion detection device will be developed and evaluated.	FY 1998
- Develop Automated Techniques for Crack/Fatigue Detection	Demonstrate a prototype structural failure monitoring and advisory system.	FY 1999
- Make Wider Use of Electronic Maintenance Reporting and Recording	Develop a plan for the use of de-identified digital in-flight operational information to monitor aircraft status and operational events.	FY 1995

WORKSHOP #4: APPLICATIONS OF NEW TECHNOLOGIES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Approach (Cont'd)	Begin using industry-collected data to identify systemic problems in aircraft fleets, aviation personnel and maintenance.	FY 1997
	Two Aviation Rules Advisory Committee (ARAC) recommendations are being developed: - Service Difficulty Report (SDR) System Rule Change - Maintenance Recordkeeping Notice of Proposed Rule Making (NPRM)	 FY 1995 FY 1995
Issue - Improve the FAA Process **Approach** - Examine FAA Organizational Effectiveness	 Implement FAA reorganization into Lines of Business.	 FY 1995
- Improve FAA Standard Setting, Development and Implementation Process	Streamlining and reengineering efforts are underway in all FAA organizations.	Ongoing
	Establish a process that will enable members of the public to submit petitions for rulemaking through properly formatted documents, including all required analyses, to expedite action on ideas submitted by the general public.	FY 1995
	Identify requirements and begin implementation of an integrated rulemaking information system that will consider such things as public access, regulatory archives, and automated text transfer for publication process.	FY 1995
	Implement the newly developed system for monitoring the cumulative costs and benefits to aviation of newly enacted rules.	FY 1995
Issue - Funding/Incentives **Approach** - Minimize Cost of New Technologies	Administration policy determination necessary.	

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WORKSHOP #4: APPLICATIONS OF NEW TECHNOLOGIES		
Safety Conference Issue	*FAA/Industry Initiative*	*Initiative Completion*
Approach (Cont'd) - Provide Appropriate Financial Incentives for Introduction of New Technology - Reduce Obstacles to Adoption of New Safety Technologies - Assess Appropriate Governmental Funding Role in Adopting New Safety Technology		

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Aircraft Maintenance Procedures & Inspections

GOAL

Identify more effective procedures and processes that can be implemented to eliminate maintenance related discrepancies.

MAJOR THEMES FROM WORKSHOP

- The qualification standards and training for aircraft maintenance personnel should receive the same focus and attention from industry and Government as the standards and training for aircraft crewmembers.

- Maintenance process reengineering is required to improve error detection and prevention through the incorporation of crew resource management and human factors principles and the removal of impediments to sharing and disclosing maintenance data.

- Industry and Government need to place emphasis and resources beyond the current minimum regulatory requirements on airline internal audit programs and the oversight of parts suppliers and vendors.

> "It is training, training, training that will have the most important and immediate impact."
> — *David Hinson*

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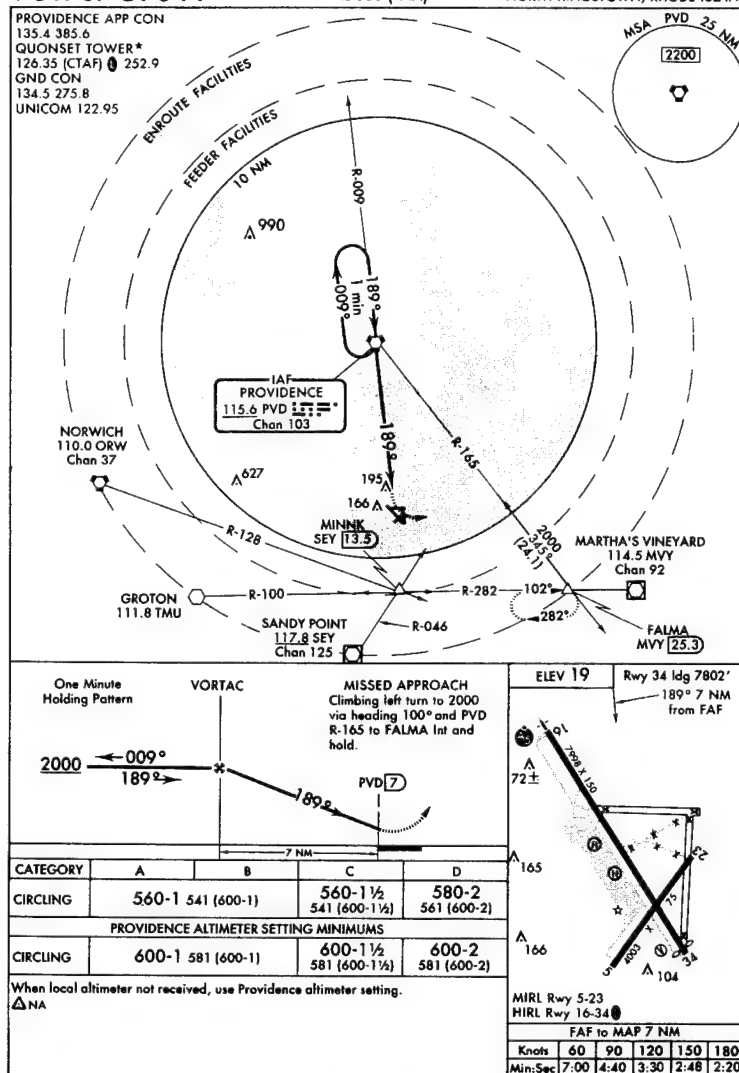| Safety Conference Issue	FAA/Industry Initiative	Initiative Completion
Issue - Maintenance and Recurrent Maintenance Training (Federal Aviation Regulations (FAR) 121.375) **Approach** - FAA Should Consider Assignment of an Aviation Rules Advisory Committee (ARAC) task to: --Revise FAR to Set Standards-Minimums (FAR Parts 121 and 135, FAR Part 121, Subparts N & O) -- Required Inspection Item (RII) Requirements Detailed for Training -- Initial and Recurrent Training for Aircraft Type -- Contract Maintenance and Servicing	Recurrent training is being addressed by an ARAC working group. FAA will propose an ARAC task to change the requirements for maintenance and preventive maintenance training programs (FAR 121.375).	Ongoing FY 1995
Issue - Maintenance Human Factors		

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WORKSHOP #5: MAINTENANCE

Safety Conference Issue	FAA/Industry Initiative	Initiative Completion
Approach - FAA Flight Standards Should Devote Additional Research Effort Toward Human Factors for Maintenance, Focused on Error Detection and Prevention	Define human factors requirements in advanced maintenance concepts.	FY 1995
	Establish the national data base for aviation human factors research as a national resource and coordination mechanism.	FY 1995
	FAA will initiate job task analysis of the Maintenance Occupation to include findings of Northwestern University's job task analysis.	FY 1995
- Environmental Aspects (Light, Noise, Temperature)	Updating Human Factors Guide for industry and government that includes information about environmental aspects related to maintenance.	FY 1995
- Maintenance Error Reporting Program --To a Central Database --To Upper Management	FAA will develop a prototype maintenance error analysis tool. Note: similar programs being develped by industry.	FY 1996
- Maintenance Resource Management Should Be Integrated With Crew Resource Management (CRM)	FAA will initiate an effort to develop a Maintenance Resource Management System for maintenance personnel, developed using the CRM model.	FY 1995
Issue - Approved Parts -- Control -- Suppliers/ Vendors -- Universal Documentation		
Approach - FAA Should Work With Industry to Establish a Uniform Documentation System for Approved Parts, Centered on the FAA Form 8130-3	The international aviation community will implement a common system for new part documentation (8130-3 tag).	FY 1995
	FAA will update Inspector guidance.	FY 1995

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Safety Conference Issue	FAA/Industry Initiative	Initiative Completion
Issue - Internal Audits Need More Emphasis **Approach** - Surpass the Continuous Analysis and Surveillance Program (FAR 121.373)	FAA will initiate correspondence to all operators encouraging full implementation of Advisory Circular (AC) 120-59 (Internal Evaluation Programs).	FY 1995
- Tie Together Quality Systems and Internal Procedures	FAA will issue a Notice of Proposed Rulemaking (NPRM) revision to FAR 145 which requires internal quality control or audit programs in repair stations.	FY 1995
- Oversight of Regional and Commuter Code-Share Partners	FAA will develop new AC to provide guidance for industry on appropriate emphasis and follow-through (should be focused on relationship between Part 121 and commuters/regionals).	FY 1996
- Direct Line to Senior Management	FAA correspondence to all operators encouraging full implementation of AC 120-59 (Internal Evaluation Programs) will include emphasis on appropriate reporting levels.	FY 1995
Issue - Maintenance Delays in DOT On-Time Reporting System **Approach** - DOT Should Remove Maintenance From Reporting System --Intimidates Maintenance Personnel --Encourages Potentially Unsafe Practices --Risk of Abuse Outweighs Benefit of Information -- Information Already Required for Submission to Local FAA	Administration policy determination necessary.	

Amdt 4 94342

VOR or GPS-A

AL-338 (FAA)

NORTH KINGSTOWN/QUONSET STATE (OQU)
NORTH KINGSTOWN, RHODE ISLAND

PROVIDENCE APP CON
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QUONSET TOWER*
126.35 (CTAF) 🔔 252.9
GND CON
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UNICOM 122.95

MSA PVD 25 NM
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MARTHA'S VINEYARD
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Chan 92

2000 (24.1) 355°

GROTON
111.8 TMU

R-100

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102°

282°

SANDY POINT
117.8 SEY
Chan 125

R-046

FALMA
MVY 25.3

One Minute Holding Pattern	VORTAC	MISSED APPROACH Climbing left turn to 2000 via heading 100° and PVD R-165 to FALMA Int and hold.	ELEV 19	Rwy 34 ldg 7802'

189° 7 NM from FAF

2000 ← 009°
189° →

189°

PVD 7

7 NM

△ 72±

7998 X 150

△ 165

△ 166

△ 104

MIRL Rwy 5-23
HIRL Rwy 16-34 ⬤

CATEGORY	A	B	C	D
CIRCLING	560-1 541 (600-1)		560-1½ 541 (600-1½)	580-2 561 (600-2)
PROVIDENCE ALTIMETER SETTING MINIMUMS				
CIRCLING	600-1 581 (600-1)		600-1½ 581 (600-1½)	600-2 581 (600-2)

When local altimeter not received, use Providence altimeter setting.
△ NA

FAF to MAP 7 NM					
Knots	60	90	120	150	180
Min:Sec	7:00	4:40	3:30	2:48	2:20

Not for use in navigation

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Development of Flight Operating Procedures

GOAL

Identify strategies to direct the systematic development of safe and efficient flight operational procedures that will not only recognize limitations of present support systems but also define requirements for future support system improvements.

MAJOR THEMES FROM WORKSHOP

- All efforts should be made to accelerate the implementation of the Global Positioning System as the primary navigation system for en route, terminal, and surface operations.

- There is a need for industrywide standardization of the approaches used to develop and present safety critical information (symbology, logic, processes, etc.).

- Air carriers should establish independent airline flight safety departments reporting to their CEO to ensure primacy of safety considerations in the development of operational and maintenance procedures and to ensure the effective and efficient management, collection, and sharing of safety data.

- FAA should take advantage of the benefits that result from a systems approach to development of air traffic control procedures that incorporates active user involvement and accelerates the implementation of existing technology (e.g., Traffic Alert and Collision Avoidance System, datalink, etc.)

- Government and industry should ensure that all members of the aviation community receive appropriate training for utilization of new technology.

> "Consider the creation in every carrier of an independent safety office."
> *Federico Peña*

WORKSHOP #6: DEVELOPMENT OF FLIGHT OPERATING PROCEDURES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Issue - Accelerate the Rate at Which Global Positioning System (GPS) Procedures Are Designed, Approved, and Implemented	Conduct demonstration testing for Category (CAT) II/III precision approaches and landings.	February 1995
	FAA will formulate a policy on Instrument Landing System (ILS)/Microwave Landing System (MLS)/GPS in support of worldwide transition planning and will present to International Civil Aviation Organization (ICAO) for Communications and Operations meeting.	March 1995
	Determine feasibility of GPS for CAT II and CAT III operations.	FY 1996
	Develop and implement terminal instrument procedures criteria, procedures development standards, and flight inspection policy and standards for Differential Global Positioning System (DGPS) CAT II/III.	FY 1996
	Develop new GPS instrument approach procedures at a rate of 500 per year.	FY 1996
Approach - Elimination of Non-Precision Approaches	Approve GPS-based CAT I operations as a primary means in the United States.	FY 1998
- Expediently Disseminate Information About GPS Approval Processes	Issue expanded guidance for the installation of GPS receivers.	FY 1995
Create Synergy Between Flight Procedures and Air Traffic Control (ATC) to Maximize Benefits of Flight Management System (FMS), GPS, Traffic Alert and Collision Avoidance System (TCAS), etc.	Air Traffic, in consultation with primary users, accomplished development of FMS approaches in 1994. Additional sites are planned for 1995.	FY 1995

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WORKSHOP #6: DEVELOPMENT OF FLIGHT OPERATING PROCEDURES		
Safety Conference Issue	FAA/Industry Initiative	Initiative Completion
Approach (Cont'd)	FAA will conclude agreement with the users on the major policy decisions that must be made and establish initial policies in as many areas as possible, including: - The integration of ATC automation efforts; - The proper balance between ATC at the scene and traffic flow management; - The most efficient information flow and communication interfaces; - The future utilization of the Global Navigation Satellite System (GNSS) and the roles it is expected to play; and - The ingredients of an Airport Surface Traffic Management System.	September 1995
	Implement GPS-based Automated Dependent Surveillance (ADS) on the airport surface.	FY 1998
	Implement GPS-based ADS surveillance capabilities into en route and terminal automation systems.	FY 1998
	Initiate a demonstration of participatory separation TCAS/ Airborne Collision Avoidance System (ACAS) for in trail descent and wake vortex separation. [Participatory separation occurs when the pilots of two aircraft request the procedure to maintain separation of their aircraft using only their own onboard systems.]	FY 1996
- Accelerate the Approval of CAT II/III DGPS Approaches	Complete feasibility demonstration testing for CAT II/III precision approaches and landings.	FY 1995
	Develop and implement terminal instrument procedures criteria, procedures development standards, and flight inspection policy and standards for DGPS CAT II/III.	FY 1996
	FAA will formulate a policy on ILS/MLS/GPS in support of worldwide transition planning and will present to ICAO for Communications and Operations meeting.	March 1995
	Determine feasibility of GPS for CAT II and CAT III operations.	FY 1996

WORKSHOP #6: DEVELOPMENT OF FLIGHT OPERATING PROCEDURES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Issue - Standardization Is a Fundamental Ingredient for Safety in Flight Procedures		
Approach - Procedures That Affect Safety Should Be Standard Among All Carriers	Develop an NPRM requiring scheduled commuter air carriers operating aircraft with more than nine seats to conform to the same level of safety required of major air carriers.	March 1995
- Review Process and Requirements for Designated Special Qualification Airports	FAA/industry will review process and requirements for Designated Special Qualification Airports	FY 1996
- Emphasize Utilization Rather Than Underlying Technology in New Equipment Training	Transport Directorate Human Factors Task Force is ongoing.	
- Standardize Charting and Display Symbologies	Charting committee is actively engaged in standardizing symbology.	Ongoing
- Automated Weather Observation System (AWOS)/ Automated Surface Observing Systems (ASOS) Should Be Upgraded to Provide Standardized Weather Reporting Capabilities	FAA will investigate the feasibility of Workshop #2's recommendation to appoint a single senior level manager/office to expedite implementation and coordination of weather systems and services. [Note: Industry also recommends that, in the long run, National Weather Service (NWS) aviation functions be transferred to FAA.]	FY 1995
	Increase the capability of on-site weather information to improve forecast and terminal reporting by implementing ASOS.	FY 1996
	Provide further increase of the capability of on-site weather information to improve forecast and terminal reporting by further implementation of ASOS.	FY 1997
	Complete transition plan for phasing-out human weather observers at ASOS sites. (The replacement of human weather observers will occur when adequate automated weather systems are installed and operational.)	FY 1998

WORKSHOP #6: DEVELOPMENT OF FLIGHT OPERATING PROCEDURES		
Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Issue - Safety Considerations Need to Be Paramount in Procedures Development **Approach** - Trust Fund Should Be Used for Aviation System Improvements and Safety and Should Be Controlled by a Trust Fund Commission	**[Industry strongly objects to diverting or withholding Trust Fund monies from aviation system improvement.]** Administration policy determination necessary.	
- Establish a Voluntary Disclosure Program That Can't Be Exploited for Journalistic Sensationalism	An FAA policy change is in development. Implement the use of de-identified digital in-flight operational information to monitor aircraft status and operational events. Initiate a process to use industry-collected data to identify systemic problems related to aircraft design and manufacture.	February 1995 FY 1997 FY 1997
- Establish a Uniform Level of Safety for All Commercial Aviation	Develop an NPRM requiring scheduled commuter air carriers operating aircraft with more than nine seats to conform to the same level of safety required of major air carriers.	March 1995
- Establish Flight Safety Departments Within All Commercial Carriers	Air Transport Association (ATA)/ Regional Airline Association (RAA) will initiate correspondence to their members encouraging establishment of safety departments within their organizations. Develop regulatory requirements to establish an independent safety department.	February 1995 FY 1996
Issue - Appropriate Training for Utilization of New Technology		

WORKSHOP #6: DEVELOPMENT OF FLIGHT OPERATING PROCEDURES

Safety Conference Issue	FAA/Industry Initiative	Initiative Completion
Approach - Increased Use of Designees	Develop criteria for the certification of designees enabling them to develop instrument approach and departure procedures in accordance with existing FAA criteria.	FY 1996
- Refresher Training for Maintenance of Basic Flying Skills When Automation Fails	Develop simulator training criteria and incorporate them in Federal Aviation Regulation (FAR) Part 121 (Appendix H).	FY 1995
- Train to Reality	Develop simulator training criteria and incorporate them in FAR Part 121 (Appendix H).	FY 1995
- Improve Training for FAA Inspectors	Update Flight Standards Master Plan for inspector training.	Completed January 1995
	Develop comprehensive Training Development Process which will establish process for design, development and evaluation of FAA inspector training consistent with best practices of Instructional System Design (ISD).	FY 1996
Issue - Airport Surface Operations Need the Same Degree of Care and Scrutiny As Inflight Operations	FAA will issue Revised Runway Incursion Plan	March 1995
	Define data link to support GPS-based ADS capability on the airport surface.	FY 1996
	Establish standards for cockpit moving map displays to enhance situational awareness on the airport surface.	FY 1996
	Issue Request for Proposal (RFP) for Airport Surface Detection Equipment (ASDE-X) radars.	FY 1997
	Conduct full-scale operational demonstration of Airport Surface Traffic Automation (ASTA) surveillance and automation functionality on airport surface operations at selected airports, analyzing human factor elements therein.	FY 1996
	Implement data link for GPS-based ADS capability on the airport surface.	FY 1998
	Implement GPS-based ADS on the airport surface.	FY 1998

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Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Approach - Runway Friction Measurement Needs to Be Standardized and Accurately Reported	An Aviation Rules Advisory Committee (ARAC) working group will submit plans for runway pavement maintenance criteria. (Industry has developed criteria for measuring and reporting runway friction.)	March 1995
	FAA will evaluate the recommendations from the FAA/Industry Winter Runway Friction Measurement and Reporting Working Group.	FY 1995
- Standardize Airport Surface Features and Utilize New Technologies to Enhance Safety	Complete definition of Airport Surface Automation functional requirements considering human factors data, in cooperation with airport operators and other ATC system users.	June 1995
	Complete installation of new airport signs on all airports certified under FAR Part 139.	FY 1996
	Implement GPS-based ADS on the airport surface.	FY 1998
- Encourage Development and Use of Data Link for Improved Communications	Expand data link delivery of pre-departure clearances to 27 additional airports.	FY 1995
	Establish data link system architecture and system implementation plan.	FY 1995
	Conduct flight trials of data-link-based traffic and weather information services for general aviation.	FY 1995
- Predetermined Taxi Routes Can Reduce Errors	Air Traffic will develop and refine standard taxi procedures and routes in coordination with Air Traffic Procedures Advisory Committee (ATPAC).	July 1995
Issue - User / ATC Cooperation Needs to Be Enhanced to Maximize the Benefits From Existing and Emerging Technologies	Initiate a national airspace analysis to identify system inefficiencies.	FY 1995

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Safety Conference Issue	**FAA/Industry Initiative**	**Initiative Completion**
Issue (Cont'd)	Complete strategic definition of relation between Traffic Management planning responsibilities, human factor elements, and "real-time" ATC responsibilities. Make sure these agreements are fully reflected in ongoing programs and plans for ground and cockpit automation.	FY 1995
	FAA will accelerate the development of new ATC procedures (FAA Order 7100.11).	FY 1995
Approach - Encourage the Use of Data Link for Routine Communications (Automatic Terminal Information Service (ATIS), Pre-departure Clearances (PDC), Etc.)	Achieve agreement with user community on implementation of two-way data link.	FY 1995
	Establish data link system architecture and system implementation plan.	FY 1995
	Expand data link delivery of PDCs to 27 additional airports.	FY 1995
	Provide ATIS via data link at 60 airports.	FY 1996
	Conduct flight trials of data-link-based traffic and weather information services for general aviation.	FY 1995
	Complete definition of Data Link System to support DGPS and other Communication, Navigation, and Surveillance (CNS)/Air Traffic Management (ATM) operations. Achieve early approval of 1030 MHz for DGPS transmission (per draft Radio Technical Corporation of America (RTCA) report and industry endorsement).	FY 1996
- Establish a Mechanism for Increased Involvement of Operators in the Development of Localized ATC Procedures	Develop criteria for the certification of designees enabling them to develop instrument approach and departure procedures in accordance with existing FAA criteria.	FY 1996
	Air Traffic will place a great deal of emphasis on user involvement in procedures development and will hold regular and numerous regional listening sessions with users. Air Traffic, in consultation with primary users, accomplished development of FMS approaches in 1994. Additional sites are planned for 1995.	FY 1995

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Safety Conference Issue	*FAA/Industry Initiative*	*Initiative Completion*
Approach (cont'd) - Maximize the Use of Standard Instrument Departure (SID)/ Standard Terminal Arrival Route (STAR) Profiles	Incorporate dynamic user flight intention data in the Enhanced Traffic Management System (ETMS).	FY 1996
Issue - TCAS Traffic Information Is Underutilized	Initiate a demonstration of participatory separation utilizing TCAS/ACAS for in trail descent and wake vortex separation. [Participatory separation occurs when the pilots of two aircraft request the procedure to maintain separation of their aircraft using only their own onboard systems.]	FY 1996
Approach - Expand Requirement for Mode C Fitment	FAA will develop a tasking for ARAC to ascertain if current regulatory requirements are adequate.	FY 1995
- Require All PART 121 Aircraft to Install and Operate TCAS II	FAA will develop a tasking for ARAC to ascertain if current regulatory requirements are adequate.	FY 1995
- Require All Transport Category Aircraft Operating Under an Air Carrier Certificate to Install and Operate TCAS II	FAA will develop a tasking for ARAC to ascertain if current regulatory requirements are adequate.	FY 1995
- Evaluate Other Shared Separation Responsibilities	Complete strategic definition of relation between Traffic Management planning responsibilities, human factor elements, and "real-time" ATC responsibilities. Make sure these agreements are fully reflected in ongoing programs and plans for ground and cockpit automation, to include the findings of the RTCA Free-Flight Report	FY 1995

Glossary

AAS	Advanced Automation System
AC	Advisory Circular
ACAS	Airborne Collision Avoidance System
ADS	Automated Dependent Surveillance
AIP	Airport Improvement Program
ALPA	Air Line Pilots Association
AMASS	Airport Movement Area Safety System
APM	Aircrew Program Manager
AQP	Advanced Qualification Program
ARAC	Aviation Rules Advisory Committee
ARPA	Advanced Research Projects Agency
ARTCC	Air Route Traffic Control Center
ASDE	Airport Surface Detection Equipment
ASOS	Automated Surface Observing Systems
ASRS	Aviation Safety Reporting System
ASTA	Airport Surface Traffic Automation
ATA	Air Transport Association
ATC	Air Traffic Control
ATCSCC	Air Traffic Control System Control Center

ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATOPS	Automatic Take-Off Performance System
ATPAC	Air Traffic Procedures Advisory Committee
AWOS	Automated Weather Observation System
CAT	Category
CFIT	Controlled Flight Into Terrain
CHI	Computer-Human Interface
CNS	Communications, Navigation, and Surveillance
CRM	Crew Resource Management
CTAS	Center TRACON Automation System
DFDR	Digital Flight Data Recorder
DGPS	Differential Global Positioning System
DLP	Data Link Processor
DOD	Department of Defense
DOT	Department of Transportation
D-side	Data-side
ETMS	Enhanced Traffic Management System

FAR	Federal Aviation Regulations
FMS	Flight Management System
FOIA	Freedom of Information Act
FOQA	Flight Operations Quality Assurance
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
IAM	International Association of Machinists
ICAO	International Civil Aviation Organization
ILS	Instrument Landing System
ISD	Instructional System Design
LLWAS	Low Level Wind Shear Alert System
LNAV	Longitudinal Navigation
LORAN-C	Long Range Navigation
METAF	Meteorological Terminal Aviation Weather Forecast
METAR	Meteorological Aviation Routine Weather Report
MLS	Microwave Landing System
MOPS	Minimum Operational Performance Standards

NAPA	National Association of Public Administration
NASA	National Aeronautics and Space Administration
NASDAC	National Aviation Safety Data Analysis Center
NPRM	Notice of Proposed Rule Making
NWS	National Weather Service
ODL	Oceanic Data Link
PDC	Predeparture Clearance
PTS	Practical Test Standards
R-side	Radar-side
RAA	Regional Airline Association
RFP	Request for Proposal
RII	Required Inspection Item
RVR	Runway Visual Range
RTCA	Radio Technical Corporation of America
SDR	Service Difficulty Report
SID	Standard Instrument Departure
STAR	Standard Terminal Arrival Route

TCAS	Traffic Alert and Collision Avoidance System
TMA	Traffic Management Advisory
TRACON	Terminal Radar Approach Control
VNAV	Vertical Navigation